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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--------------------------------------|-------------|----------------------|-------------------------|------------------|
| 10/537,868 | 06/07/2005 | Yoshiaki Hasegawa | OKUDP0116US | 8395 |
| 51921 | 7590 | 10/02/2006 | EXAMINER | |
| MARK D. SARALINO (MEI) | | | INGHAM, JOHN C | |
| RENNER, OTTO, BOISSELLE & SKLAR, LLP | | | ART UNIT | |
| 1621 EUCLID AVENUE | | | PAPER NUMBER | |
| 19TH FLOOR | | | 2814 | |
| CLEVELAND, OH 44115 | | | DATE MAILED: 10/02/2006 | |

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/537,868 | Applicant(s) HASEGAWA ET AL. | |
| | Examiner John C. Ingham | Art Unit 2814 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/7/05, 5/25/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims **1-11** are rejected under 35 U.S.C. 102(b) as being anticipated by Goto (US 6,522,676).

3. Regarding claims **1 and 7**, Goto discloses in Fig 6 a semiconductor light-emitting element comprising: a first group II-V compound semiconductor (5a); a current confining layer (6), which is made of a second group III-V compound semiconductor that has grown on a selected surface area of the first group III-V compound semiconductor and which has a striped opening (see Fig 1) extending along the length of a resonant cavity; and a third group III-V compound semiconductor (5b), which covers the surface of the first group III-V compound semiconductor that is exposed through the striped opening and the surface of the current confining layer, and wherein the group III-V compound semiconductors are gallium nitride based (col 8 ln 10-17).

4. Regarding claims **2-5**, Goto discloses in Fig 6 the element of claim 1 wherein the current confining layer (6) has two overhanging portions (above area 52) that overhang toward the striped opening, wherein a gap (filled by 52) is provided between each of the two overhanging portions of the current confining layer and a part of the surface of the first group III-V compound semiconductor (5a), wherein the gap has a height of 0.1µm

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and a width of $0.5\mu\text{m}$ (col 8 ln 46-51) and wherein a portion of the third group III-V compound semiconductor (5b), which contacts with the surface of the first group III-V compound semiconductor through the striped opening has a width of $2.5\mu\text{m}$ (W2).

5. Regarding claim 6, Goto discloses in Fig 6 the element of claim 1 wherein the first group III-V compound semiconductor has a multilayer structure (3, 4, 5a) including an active layer (4).

6. Regarding claim 8, Goto discloses in Fig 6 the element of claim 7 wherein the current confining layer (6) is AlGaIn and has a thickness of $0.3\mu\text{m}$ (col 8 ln 16, 30).

7. Regarding claims 9-11, Goto discloses in Fig 6 the element of claim 1 wherein the conductivity of the first (5a) and third (5b) group III-V compound semiconductors is the same (p type), and wherein the conductivity of the second group III-V compound semiconductor is opposite (n type).

8. Regarding claim 12, 16 and 18, Goto discloses in Fig 8 a method for fabricating a semiconductor light-emitting element, the method comprising the steps of: (step a) providing a striped masking layer (15), with a width set to $2.5\mu\text{m}$, on a first Group III-V compound semiconductor (56a); selectively growing a second Group III-V compound semiconductor (6) over the entire surface of the first group III-V compound semiconductor except a portion covered with the masking layer, thereby forming a current confining layer that has a striped opening defined by the masking layer (step b); selectively removing the masking layer; and growing a third Group III-V compound semiconductor (56b), to cover the surface of the first group III-V compound semiconductor, which is exposed through the striped opening at a portion with a width

of 2 μ m, and the surface of the current confining layer (step c), and wherein the group III-V compound semiconductors are gallium nitride based (col 8 ln 10-17).

9. Regarding claim 13, Goto discloses in Fig 8(b) the method of claim 12 wherein the step of selectively growing a second group III-V compound semiconductor (6) includes growing laterally toward the center of the masking layer, thereby defining two overhanging portions for the current confining layer (col 9 ln 7-17).

10. Regarding claim 14, Goto discloses in Fig 8(c) the method of claim 13 wherein the removal of the masking layer includes removing parts of the masking layer (15), which are located under the overhanging portions of the current confining layer (6), thereby making the overhanging portions (area 52) overhang toward the center of the striped opening.

11. Regarding claim 15, Goto discloses in Fig 8(c) the method of claim 14, wherein the growing of the third group III-V compound semiconductor includes providing gaps between the first group III-V compound semiconductor (56a) and the overhanging portions (portions of 6 above areas 52).

12. Regarding claim 17, Goto discloses in Fig 6 the element of claim 1 wherein the first group III-V compound semiconductor has a multilayer structure (3, 4, 5a) including an active layer (4).

13. Regarding claim 8, Goto discloses in Fig 6 the element of claim 7 wherein the current confining layer (6) is AlGaN and has a thickness of 0.3 μ m (col 8 ln 16, 30).

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Conclusion

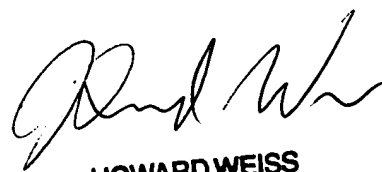
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Ingham whose telephone number is (571) 272-8793. The examiner can normally be reached on M-F, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John C Ingham
Examiner
Art Unit 2814

jci


HOWARD WEISS
PRIMARY EXAMINER